



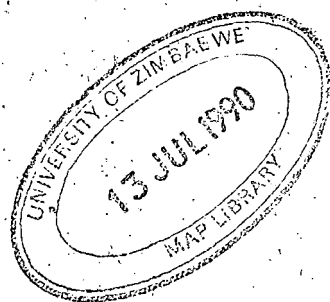
# GEOGRAPHICAL EDUCATION MAGAZINE



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### CONTENTS

	<u>Page</u>
Editorial ... ..	ii
Waggetwocky ... ..	1
Glossary of common words used in soil studies ... ..	2
Randstad: Holland ... ..	27
An outline on Common Property Resources ... ..	54
Simple field and laboratory work in Physical Geography (Part 1)	65
Rural Spatial Structure ... ..	76
Odds and Ends	79
Some characteristics of major biomes in Africa ...	79
Specimen answer to an 'O' level geography question. June 1983. ... ..	80
Major agricultural areas of the world ... ..	83
Selected climatic statistics ... ..	84
World population distribution ... ..	85
Some important references on networks and network analysis ... ..	86
Review: Water for development in Zimbabwe ... ..	87

AN OUTLINE ON  
'COMMON PROPERTY RESOURCES'.

by

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Common property resources have a number of features in common including the following:-

1. The resource can be used by more than one individual at the same time;
2. no individual has exclusive control of the resource nor can any one person stop others from using it;
3. an increase in users affects each person's satisfaction (i.e. in obtaining the resource in the desired quantity and quality), and since each user is in direct competition with others his only incentive is to obtain as large a share of the resource as possible before others use it;
4. restraint in use is not rewarded since anything not taken will be claimed by others.

Following from these one can identify some of the consequences of using such resources; these includes:-

1. the resource is often depleted more rapidly than would otherwise occur if it was under the control of a single individual or institution;
2. there tends to be an excess amount of capital investment in 'capital' necessary to exploit a given resource since users invest more in order to gain more;
3. there tend to be more 'users' than can be sustained by supplies of the given resource.

These characteristics are by no means definitive since clearly there are examples of resources e.g. 'communal grazing lands' or 'communal woodlands' such as occur in the rural areas of this country, which meet some of the criteria of common property resources. In these cases there is some degree of control on the use of available resources through general consensus amongst a group of people; nevertheless, it appears that as pressures on

the resources build up that there is a break-down in this agreement and it becomes a 'free-for-all' situation (Whitlow, 1979 and 1980). Perhaps a more appropriate example of a common property resource that is familiar locally are the woodlands around the capital city of Zimbabwe, although even here there are problems of definition since the trees are treated as common property by one group of people (the low income families), but the woodlands occur on either municipal or privately-owned land and do in fact belong to someone i.e. resource is theoretically under the control of a single user. In practice the trees are being felled at an alarming rate through 'illegal felling' to provide woodfuel for the urban poor; a peculiar feature of this exploitation is that trees which have been ring-barked by one individual are recognised by others to be the property (not in a legal sense since the trees belong to the land owner and not the 'trespassers' who are exploiting the trees) of that individual, although he/she may well not be known to them. In some respects this represents a form of communal agreement or consensus amongst the wood-gatherers. If one examines the criteria by which common property resources are identified it is clear that the woodlands fulfil most of the conditions; certainly there is no apparent concern over the fact that supplies of woodfuel are being depleted rapidly, without any heed for future supplies. Apart from this there is the problem of conflict with the 'legal owners' and the ecological consequences of deforestation.

Scenic resources have an element of common property characteristics; however, in the same way that the definition of scenic resources is extremely difficult (being a function of individual preferences), so the significance of the common property characteristics of a landscape is difficult to identify. One can illustrate some of the aspects with a simple example of a motorway route which is planned to pass through a scenically attractive region i.e. forested hills and lakes (note: this is what I would view as scenic - someone else may well have different perceptions). Clearly the introduction of a large man-made structure into a natural and 'unspoiled' area is going to have an adverse effect on its scenic qualities, not to mention the addition of the noise and pollutants from the motorway traffic and the fact that it represents a hazard to the wildlife in the forest. In addition, a number of viewing places or 'lay-byes'

may be planned for the motorway and this would encourage more and more people to take advantage of the scenic resources, albeit these would no longer be in a natural state as before. In this example one can appreciate that while a large number of people can benefit from an intangible resource such as a beautiful view, this can be spoiled by activities beyond their control such as the building of a motorway through a valley. Also the value of the scenery is not unrelated to the fact that individuals often attach great importance to being able to have 'exclusive' rights to a vista (at least as long as they are gaining enjoyment from it); crowding tends to have a negative effect on this, such that one is unable to derive satisfaction from a given scene if forced to join a large group of sight-seers.

A classic paper on the 'tragedy of the commons' was presented by Hardin (1968); in this paper he was concerned with man's abuse and misuse of publicly-owned resources such as water, air and the landscape. Whilst these are used by everyone, whether this is done consciously or not, they are subject to the neglect and misuse that befalls all 'common property' (including park benches and national monuments)... few are concerned about their welfare, unless legally required to do so (such as a park attendant), even fewer are responsible for their deterioration and/or destruction and the majority are either unaware or disinterested. That is until a crisis situation develops and the village pond turns pea-green with an algal bloom owing to excessive enrichment from the waste products (inadvertently?) dumped in the water, by persons unknown, or there is an epidemic of respiratory disorders during a cold spell, during which there is a gradual build-up of pollutants in the air (and emanating from the factory down the road, which in the interests of economy has not fitted expensive filters to its smoke stacks.... the shareholders are pleased, but not the people in the vicinity of the factory.). The main thesis of Hardin's paper is that common property resources are mismanaged, being used by all, yet no individual is responsible for their well-being; they are therefore subject to universal neglect and in some cases unbridled exploitation; ultimately this will have adverse effects not only on the resources themselves but on those who depend on or derive satisfaction from the resources.

The resources of the oceans, both mineral and biological, provide the clearest examples of common property resources (see paper by Ross, 1971). As in previous examples, they also provide evidence of conflicts in resource use which, in extreme cases, can give rise to armed conflict between competitive users e.g. the 'cod war' between Britain and Iceland, with the latter disputing the rights of the British to fish in the seas off Iceland. There are various ways of examining the ocean's resources; one scheme is given by Ross (1971) as follows:-

- a) exploitation of such products as oil and fish represent the 'extraction' of resources;
- b) navigational activities and industrial plants (especially petro-chemicals) produce waste materials which result, ultimately, in the deterioration of resources and which constitute an 'addition' to the environment.

There is clearly a conflict of interests between these activities, since for example the best fishing grounds are generally located in the continental shelf zone and shipping (especially large oil tankers) moving through these waters can have an adverse effect on the organisms in the sea, including the phytoplankton on which the fish feed. With growing pressures upon terrestrial resources there has been greater interest shown in the potential resources of the oceans; these include the supply of protein to feed people and livestock, and the extraction of a variety of minerals such as oil, gas and manganese nodules. Improvements in technology have enabled the exploitation of resources in the more inaccessible parts of the oceans i.e. areas that are remote in terms of distance from land or depth below the water. With the increasing demands and the ability to utilize resources in the oceans, so conflicts of interest between users have developed. These can and have taken many forms; for example, the dispute over catching whales where on one hand there are a large number of nations that favour conservation of certain species (some species have already become or are in danger of becoming extinct as a result of overexploitation this century), while a few countries, notably Japan and the USSR, persistently ignore such pleas and refuse to ratify international agreements on conservation of whales. Similarly, one has more localized disputes over the use of 'common fishing grounds' such as the catching of salmon in the open seas off North America, mainly by Japanese

trawlers, an activity which deprives the coastal fishermen of their livelihood and which jeopardizes the future of the salmon stocks, since the adult salmon are prevented from returning to the inland river sites where they spawn. On a rather different theme, one has the conflict between coastal and land-locked states over claims to the resources of the sea-bed outside the limits of territorial seas i.e. beneath the high seas; obviously the latter would like to partake of the wealth of the oceans. This conflict has another dimension in that it is only the technologically-advanced countries that are in a position to carry out exploration of the materials beneath the oceans; the less technologically-advanced countries (essentially Third World states, whether coastal or inland) will have to persuade these nations to allow 'access' to the perceived riches of the seas. More details and examples are given in Ross (1971) and Prescott (1975). To simplify the argument, attention will be confined to the general issues of fishing. Fish in the oceans meet all the criteria of a common property resource as outlined earlier; these are:-

- fishing grounds can be used by more than one vessel at a time;
- no fisherman has exclusive control over the fish, nor can he prevent others from fishing in the same waters (and perhaps catching more fish than he is!);
- an increase in the number of fishermen inevitably results in a reduction of the number and quality of the fish;
- restraint in use is not rewarded since any fish not caught by one fisherman will be caught by the others.

This combination of characteristics results in poor management of fishing grounds that are outside territorial waters; even within 'exclusive fishing zones' which may extend further than the territorial limits one has the problem of enforcing controls over the fishing activities and, where such zones are in dispute, there is often the problem of poaching of fish resources.

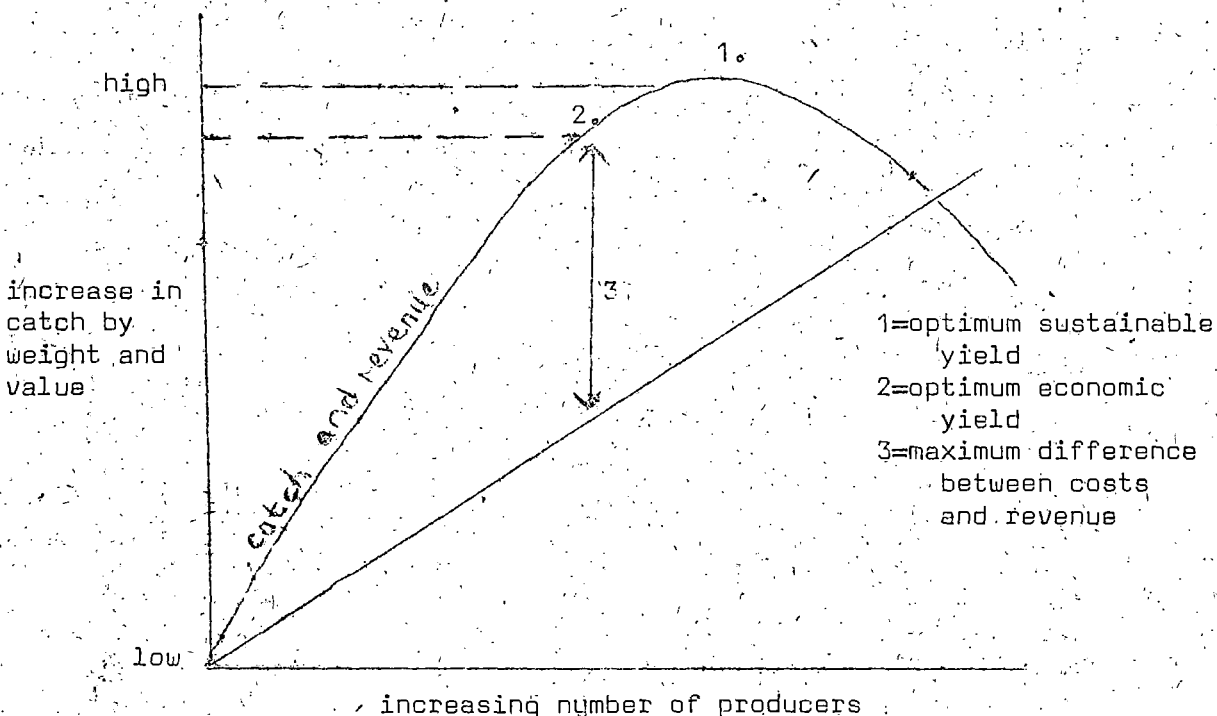
Fishing also provides a good example of the consequences of using a common property resource; these include:-

- rapid depletion of the fish resources through over-fishing;
- excessive investment in 'facilities' to catch fish by different nations competing for the same resources i.e. investment in trawlers, processing plant etc.

- tendency for more fishermen than can be sustained either economically or biologically on the same fishing grounds.

Some of these points are illustrated in the graph below which is taken from Prescott (1975).

This graph indicates that as the number of fishermen increases so the catch and revenue increase; this cannot go on indefinitely since the fish population will eventually be affected, especially



if the fishermen do not leave a sufficiently large enough breeding population. Once the biological limits are exceeded where more fish are being caught than are being replaced, then the total catch will decline; clearly where there are several nations exploiting the same fishing ground or same species of fish, this situation can arise more easily than where a single nation (or individual) is involved. In the initial stages of exploiting a given fishing ground the returns per unit investment in say a new trawler are high; but as the number of trawlers increase in relation to proportionally less fish the costs of production actually increase. Therefore, one can define an optimum economic yield which is less than the biologically sustainable yield (see graph); at this stage there is some wastage of the fish resources since more could be



caught but the cost of doing so are much greater i.e. one has reached a stage of diminishing returns on investment. Furthermore, if fishing continues beyond the biologically desirable limit, which is the current trend of events, then the problem of diminishing returns becomes even greater with a decline in total catch and hence in revenue. This can have serious repercussions on communities that are dependent to a large extent on fishing for their livelihood. Perhaps more seriously it is difficult to define this limit until after it has been exceeded; there are several reasons for this including the mobility of fish stocks, the inadequate biological knowledge about fish populations and the lack of statistical data on fish. Once the biological limit has been exceeded it is possible that an exploited fish species may never regain its ecological status in a given fishing ground, having been displaced by other fish species that are less desired by the fishermen.

As mentioned earlier there have been a number of disputes in recent years over the exploitation of fish resources. The causes of these disputes are given by Prescott (1975) and are summarised below:-

1. there is an uneven distribution of fish stocks in the oceans, therefore conflicts develop over rights to fish in the more favourable areas of the continental shelf zone in particular;
2. fish stocks fluctuate through time; whether this is due to natural or other causes is not always clear (see Eckholm's account of the Peruvian 'anchovy crisis'); but this too can give rise to conflicts where there is greater competition to catch fewer fish;
3. the development of 'distant' fleets by the United States, Japan, Britain and the USSR etc. has brought about conflicts with 'domestic' fleets; the former comprise large trawlers equipped with sophisticated detecting devices to locate fish and which can operate at long distances from their home ports for several months; often such a fleet of trawlers would be accompanied by a factory ship which would process the fish as caught and which effectively extends the range of the fishing fleet; for example the Japanese currently operate off Iceland, the USA fishes off Argentina and the Spanish fleet operates off the coast of south-west Africa. In the early

- 1970's the largest distant fleets were operated by the USSR (41% of the catch) and Japan (25%). Clearly such large scale fishing is bound to have an adverse effect on the domestic fishing fleets with their more restricted range and technology.
4. there has been growing concern, in the face of rising demands for fish products and increased efficiency of production, over the depletion of fish stocks; however, while some users are concerned about the conservation and rational management of the fish resources, others are either not concerned or intend to make short term economic gains whilst they can still catch fish; perhaps the biggest, but by no means the only culprits in this regard are the USSR and Japan.
  5. the oceans represent an 'exploration frontier' with (apparently) untold wealth; the nett result has been what could be termed 'a scramble for the seas' by both developing and developed nations.

In most disputes over fishing grounds one can identify two arguments as follows:-

- a) a desire by one of the parties to gain a larger share of the catch; and
- b) a desire by the same party to extend the economic life of the fish stocks through conservation measures.

In practice what appears to happen is that an argument is put forward to exclude other fishermen in the interests of conservation, but which at the same time secures a greater share of the catch for the contesting party e.g. conflict between distant and domestic fleets.

Various ways of overcoming disputes are discussed by Prescott (1975) so discussion will be confined to some comments on international agreements on the use of the oceans and their resources. The essence of the problem has been identified by Prescott (1975) in a comment on the outcome of the 1974 Law of the Sea Conference which was held in Caracas; Prescott states that:-

"the only effective decision of the conference was that it should be reconvened in Geneva from 17 March to 3 May 1975".

Clearly there are a number of complex and interrelated issues that

prevent international agreements on the use of the oceans; many of these issues are concerned with political, economic and social circumstances of disputing nations. A simple case study serves to illustrate some of the problems.

Both Icelandic and British trawlers fish in the seas of the North Atlantic. As the pressures on the fishing grounds built up during the 1950's and 1960's so the Icelandic fishermen became concerned over the depletion of certain species of fish, especially cod. Eventually in early 1973 they declared an exclusive fishing zone of fifty miles beyond Iceland's territorial waters; Britain disputed this limit since it effectively excluded her trawlers from over half of what were considered to be her 'traditional' fishing areas. The result was that eventually the contesting parties resorted to physical conflict on the high seas; even now the dispute has not been resolved satisfactorily. In this case one had a small island i.e. Iceland, arguing that the apparent over-utilization of the Atlantic fisheries was leading to the undermining of her entire economy; yet on the other hand Britain argued that she was being excluded from traditional fishing grounds and that certain of the towns on her north-east coast were equally dependent on fishing for their livelihood. On balance one feels that Iceland should receive greater sympathy than Britain, but the fishermen of Grimsby and Hull on the north-east coast of England would probably dispute this!

Clearly it is very difficult to resolve such disputes and about the only generalization that can be drawn from the study of such cases is that each dispute has to be evaluated on its own merits. Apart from difficulties in resolving 'domestic' disputes it is apparent that international agreements have only worked when all the affected parties have abided by the rules of the agreement and all of the affected parties have actually ratified the agreement; for example, it is no good if the USA, Britain and others agree to stop killing whales if one of them continues to do so in contravention of their agreement, or if the main 'whaling' nations i.e. Japan and the USSR refuse to be party to the agreement.

In general, it would appear that international organizations who act as the 'custodians of the commons' have failed to achieve their objectives. Such bodies have been criticised by Mitchell (1979) as follows:-

- a) institutional arrangements of large organizations fail to give sufficient power to agencies in different regions/countries;
- b) institutions are given inadequate enforcement responsibilities by member states e.g. to enforce quotas, levy fines etc.
- c) institutions do not provide for adequate scientific staff to investigate problems and monitor the status of fisheries; this is essential to provide the necessary information upon which policy decisions can be made;
- d) institutions do not always have representatives of all interested and participating bodies or persons; therefore decisions and/or actions are not always accepted unilaterally;
- e) international bodies tend to favour presentation of only those recommendations that they know to be acceptable i.e. not prepared to pursue unpopular policies; on the other hand they are in a position of having to achieve some measure of agreement on controversial issues where member states are out to gain everything that they can for their own purposes.

Apart from these general issues Mitchell (1979) lists the following specific failures of international bodies: inability to

- restrict non-party countries from exploiting a given resource
- react quickly to problems (i.e. too bureaucratic)
- obtain necessary data on specific problems or longer term monitoring
- maintain communications.

The field of 'common property resources' is an extremely diverse one, and the geographer can make an important contribution to this field through the study of the interactions of human and physical factors in time and space. Some examples of such studies have been given in this paper, and the full references to these are cited in the main reading list.

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